

CLAIMS

What is claimed is:

1. A method of making a photomask for use in a lithographic process, comprising:

5 providing a mask blank including a substrate, a sacrificial conductive layer disposed over the substrate and a radiation shielding layer disposed over the sacrificial conductive layer;

forming structures from the radiation shielding layer to define a pattern; and

10 measuring parameters associated with the structures with a measurement tool, during the measuring the sacrificial conductive layer provides a conductive plane to dissipate charge transferred to the mask by the measurement tool.

2. The method of claim 1, further comprising selectively etching the sacrificial conductive layer to transfer the pattern defined by the radiation shielding layer to the sacrificial conductive layer.

3. The method of claim 1, wherein forming structures from the radiation shielding layer includes etching the radiation shielding layer with an etch process that has substantially no reaction with the sacrificial conductive layer.

4. The method of claim 3, further comprising selectively etching the sacrificial conductive layer to transfer the pattern defined by the radiation shielding layer to the sacrificial conductive layer with an etch process that has substantially no reaction with the radiation shielding layer.

5. The method of claim 1, wherein the radiation shielding layer is comprised of CrON.

6. The method of claim 1, wherein the sacrificial conductive layer is comprised of a material selected from aluminum, copper, titanium nitride and combinations thereof.

5 7. The method of claim 1, wherein the measurement tool is an electron microscope.

8. The method of claim 1, further comprising accepting the mask if the measured parameters fall within acceptable tolerances, otherwise rejecting the mask.

10 9. The method of claim 1, wherein the measured parameters include critical dimension of the radiation shielding layer structures.

10. The method of claim 1, wherein the sacrificial conductive layer underlies the entire radiation shielding layer.

11. The method of claim 1, wherein the sacrificial conductive layer underlies a portion of the radiation shielding layer.

15 12. The method of claim 11, wherein the sacrificial conductive layer defines a test region of the mask and parameters of structures formed from the radiation shielding layer in the test region are measured as an indication of parameters associated with structures formed from the radiation shielding layer outside the test region.

20 13. The method of claim 1, further comprising connecting the sacrificial conductive layer to a voltage potential during the measuring.

14. The method of claim 13, wherein the voltage potential is ground.

15. A photomask for use in a lithographic process, comprising:
a substrate;
a sacrificial conductive layer disposed over the substrate; and
a radiation shielding layer disposed over the sacrificial conductive layer,

5 the radiation shielding layer having structures defining a pattern;

wherein during measurement of parameters associated with the structures of the radiation shielding layer with a measurement tool, the sacrificial conductive layer provides a conductive plane to dissipate charge transferred to the mask by the measurement tool.

10 16. The photomask of claim 15, wherein the radiation shielding layer can be etched by an etch process that has substantially no reaction with the sacrificial conductive layer.

15 17. The photomask of claim 15, wherein the sacrificial conductive layer can be etched by an etch process that has substantially no reaction with the radiation shielding layer.

18. The photomask of claim 15, wherein the radiation shielding layer is comprised of CrON.

20 19. The photomask of claim 15, wherein the sacrificial conductive layer is comprised of a material selected from aluminum, copper, titanium nitride and combinations thereof.

20. The photomask of claim 15, wherein the measurement tool is an electron microscope.

21. The photomask of claim 15, wherein the sacrificial conductive layer underlies the entire radiation shielding layer.

22. The photomask of claim 15, wherein the sacrificial conductive layer underlies a portion of the radiation shielding layer and defines a test region of the photomask and structures formed from the radiation shielding layer in the test region define test structures that have parameters indicative of parameters of structures formed from the radiation shielding layer outside the test region.
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